VAMAS

Creep, Crack and Fatigue Growth in Weldments
Technical Work Area 31

Project 8

High Temperature Creep/Fatigue Crack Growth of USC and A-USC Materials and Welds

Objectives

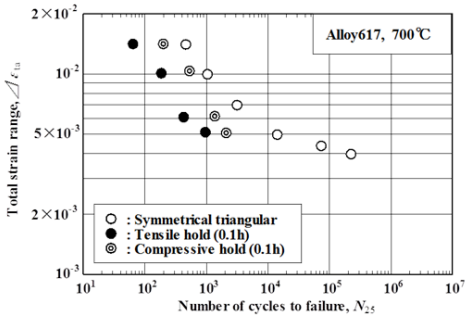
The objective of the exercise will be to conduct a round-robin test (RRT) for creep and creep-fatigue crack growth for USC and A-USC materials and their welds for their reliability and safety.

Background

In order to reduce CO_2 emissions, steam and pressure conditions of thermal power plant tend to become severe for heat resistant steels and alloys. It is necessary to understand creep/fatigue crack growth properties and to establish test procedures for safety and reliability of power plants.

Standardization Needs

As a result of TWA31 activities, two standards for creep crack growth were published. However, there are insufficient data for creep-fatigue crack growth of USC and A-USC materials. These materials and welds are damaged by creep fatigue interactions under start-stop operating conditions. It is therefore necessary to develop and improve test standards for creep-fatigue crack growth.



Work Programme

2017: Specimen preparation, Start RRT for creep-fatigue crack growth of high Cr steels and Alloy 617.

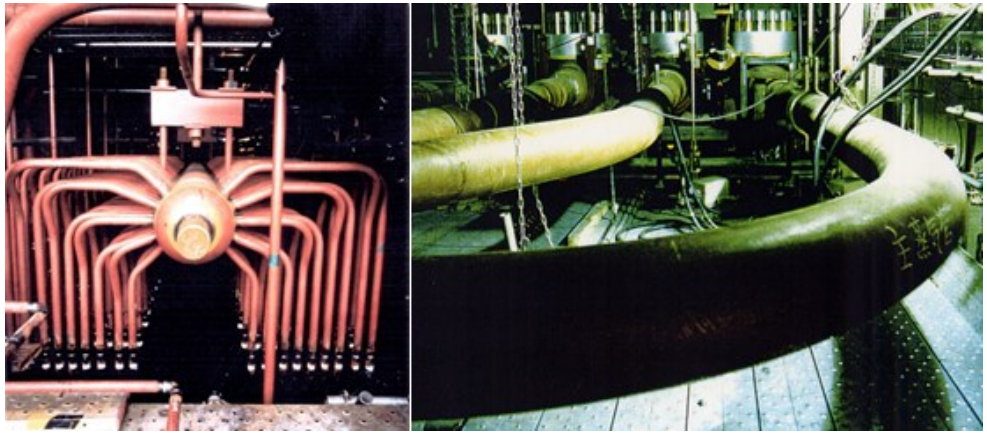
2018: RRT for high Cr steels, Alloy 617 and welds

2019: RRT for high Cr steels, Alloy 617 and welds, Test and evaluation procedure.

Deliverables and Dissemination

1. Construct data for creep and creep -fatigue crack growth of USC and A-USC materials and welds.
2. Organise a symposium and publish paper or special issue in international journal.
3. Publication of a technical report for code of practice for creep/ fatigue crack growth testing.

Call for Participation



Funding

Participants fund their own involvement in the project.

Status

The project will start in July 2017.
Test materials are prepared and basic tensile and creep test is in progress as part of internal validation.

References

・ASTM E1457-15: Standard Test Method for Measurement of Creep Crack Growth Times in Metals

・ISO/TTA 5: Code of practice for creep/fatigue testing of cracked components

More participants welcome

For more information on participation, please contact:

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